REMARKS

In the Office Action mailed September 4, 2003, claims 1–20 were objected to for including of the term "substantially." In addition, claims 17–24 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,394,534 to *Leung et al*, and also over U.S. Patent No. 5,991,851 to *Alwais et al*. Finally, claims 1–20 were rejected under 35 U.S.C. § 103(a) over *Alwais* in view of *Leung*.

Claims 1, 11 and 21 are amended to recite that "logically adjacent rows" are placed in "different sub-arrays." Support for this amendment can be found, among other places, in the specification at page 9, lines 9–22. Claim 21 is also amended to recite "at least one array row of at least one of the plural DRAM sub-arrays not referenced by the access request is refreshed while contemporaneously performing the access request." Support for this amendment can be found in the specification on page 4, lines 9–15.

No new matter is added by the amendment and claims 1–24 are pending in the application. Reconsideration and withdrawal of the rejections is respectfully requested in view of the amendment and the following remarks.

A.   Objection to Claims 1–20 is Addressed

Claims 1–20 were objected to for including of the term "substantially" in claims 1 and 11. The objection is made moot by the amendment, which deletes the term "substantially" in these claims. Accordingly, withdrawal of the objection to claims 1-20 is respectfully requested.

B.   Rejection of Claims 17–20 under § 102(b) over *Leung* or *Alwais* is Legally Insufficient

Claims 17–20 were rejected under 35 U.S.C. § 102(b) alternatively over *Leung* or *Alwais*. These rejections are respectfully traversed.

The § 102(b) rejection of dependent claims 17–20 is improper and legally insufficient because each of these claims depend directly or indirectly from independent claim 11. The Office Action has neither rejected claim 11 under § 102 over *Leung* or *Alwais* nor presented any evidence of anticipation

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of the elements of claim 11 as being present in *Leung* or *Alwais*. Because these elements of claim 11 are necessarily incorporated into dependent claims 17-20 through their dependency from claim 11, and a proper rejection under § 102 requires that each and every element of a claim be disclosed in a single prior art reference (*See* MPEP § 2131), withdrawal of the rejection of claims 17-20 under 35 U.S.C. § 102(b) over *Leung* and in the alternative over *Alwais* is respectfully requested.

C.   Rejection of Claims 21-24 under § 102(b) over *Leung* or *Alwais* is
       Addressed

As amended, claim 21 includes the following requirement:

> at least one array row of at least one of the plural DRAM
> sub-arrays not referenced by the access request is
> refreshed while contemporaneously performing the
> access request and logically adjacent rows are placed in
> different sub-arrays.

This element is neither taught nor suggested by *Leung* or *Alwais*. Thus, as amended, claims 21-24 recite a limitation not present in either of the references on which the § 102(b) rejection is based. Accordingly, withdrawal of the § 102 rejection of claim 21 (and claims 22–24, which depend from claim 21) over *Leung* or *Alwais* is respectfully requested.

D.   Rejection of Claims 1–20 under § 103(a) over the Combination of
       Alwais and *Leung* is Addressed

Claims 1–20 were rejected under 35 U.S.C. § 103(a) over *Alwais* in view of *Leung*. This rejection is made moot in light of the above amendments. More particularly, claim 1, as amended, recites that

> . . . logically adjacent rows are placed in different
> sub-arrays. . .

Claim 11, as amended, recites

> . . . placing logically adjacent rows in different sub-
> arrays.

Placing logically adjacent rows in different sub-arrays reduces the possibility that an individual sub-array falls so far behind in its refreshes that the data stored in the row is lost. *See specification*, page 9, lines 9–22. This permits

increased efficiency in sub-array refresh sequences without increasing memory errors due to data loss.

This element is neither taught nor suggested by *Alwais* in view of *Leung*. Claims 2–10 and 12–20, which depend from claims 1 and 11, respectively, also include this element. Accordingly, withdrawal of the rejection of claims 1–20 under 35 U.S.C. § 103(a) over *Alwais* in view of *Leung* is respectfully requested.

E.   Conclusion

In view of all of the above, claims 1–24 are believed to be allowable and the case in condition for allowance, which action is respectfully requested. Should the Examiner be of the opinion that a telephone conference would expedite the prosecution of this case, the Examiner is requested to contact the attorney at the telephone number listed below.

No fees are believed to be required with this Response, and should any be required, please charge Deposit Account 50-1123. Should any extension of time be required, please consider this a petition therefore and charge the required fee to Deposit Account 50-1123.

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